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## 1 The macro model for data compression (Extended Abstract)

James A. Storer, Thomas G. Szymanski

May 1978 Proceedings of the tenth annual ACM symposium on Theory of com

Full text available: pdf(771.10 KB)

Additional Information: full citation, abstract, references,

A general model for data compression is presented which includes most data compression schemes as special cases. All macro schemes are based on the principle of finding redundancies in the data and compressing them by pointers to a common copy. Different varieties of macro schemes make different interpretations of pointers, for instance, a pointer may indicate a substring of the original string, or a substring of some ...

## 2 Compactly encoding unstructured inputs with differential compression

Miklos Ajtai, Randal Burns, Ronald Fagin, Darrell D. E. Long, Larry Stockmeyer  
May 2002 Journal of the ACM (JACM), Volume 49 Issue 3

Full text available: pdf(348.32 KB)

Additional Information: full citation, abstract, references,

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Keywords: Delta compression, differencing, differential compression

### 3 In-place reconstruction of delta compressed files

Randal C. Burns, Darrell D. E. Long

June 1998 Proceedings of the seventeenth annual ACM symposium on Principles (

Full text available:  pdf(1.18 MB)

Additional Information: full citation, references, citations, index

### 4 Delta algorithms: an empirical analysis

James J. Hunt, Kiem-Phong Vo, Walter F. Tichy

April 1998 ACM Transactions on Software Engineering and Methodology (TOSEM)

Full text available:  pdf(388.07 KB)

Additional Information: full citation, abstract, references,

Delta algorithms compress data by encoding one file in terms of another. This number of situations: strong multiple versions of data, displaying differences, storing backups, transmitting video sequences, and others. This article studies delta algorithms, using a benchmark of over 1,300 pairs of files taken from two Results indicate that modern ...

Keywords: benchmark, delta encoding, differencing

### 5 Datapath and control for quantum wires

Nemanja Isailovic, Mark Whitney, Yatish Patel, John Kubiatowicz, Dean Copsey, Mark Oskin

March 2004 ACM Transactions on Architecture and Code Optimization (TACO),

Full text available:  pdf(476.83 KB)

Additional Information: full citation, abstract, references

As quantum computing moves closer to reality the need for basic architecture Quantum wires, which transport quantum data, will be a fundamental component architectures. Since they cannot consist of a stream of electrons, as in the classical case, they must fundamentally be designed differently. In this paper, we present two quantum operations: a controlled swap of adjacent qubits, and a teleportation wire, ...

Keywords: Architecture, Control, Layout

**6 Mobile data management: Mimic: raw activity shipping for file synchronization**

Tae-Young Chang, Aravind Velayutham, Raghupathy Sivakumar

June 2004 Proceedings of the 2nd international conference on Mobile systems, a

Full text available:  pdf(334.54 KB)

Additional Information: full citation, abstract, references

In this paper, we consider the problem of file synchronization when a mobile client connects to a server in a network file system. Several *diff* schemes have been proposed to improve upon conventional file synchronization approaches which use full file transfer. These schemes compute the difference between a new file with respect to the old copy at the server and transfer the computed differences to the server for file-synchronization. However ...

Keywords: file synchronization, mobile file system, raw activity shipping

**7 VRML molecular dynamics trajectories**

Geoff Leach, James Gilbert

February 1999 Proceedings of the fourth symposium on Virtual reality modeling lan

Full text available:  pdf(2.25 MB)

Additional Information: full citation, references, index terms

Keywords: VRML, compression, molecular dynamics, scientific visualisation

**8 Location-based services and mobile computing: algorithms: Vector map compression**

Shashi Shekhar, Yan Huang, Judy Djugash, Changqing Zhou

November 2002 Proceedings of the tenth ACM international symposium on Advanc

Full text available:  pdf(450.63 KB)

Additional Information: full citation, abstract, references

Vector maps (e.g. road maps) are widely used in a variety of applications such as Geographic Information Systems(GIS), Intelligent Transportation Systems(ITS) and mobile computing. However, the large size of vector maps has in some cases negatively impacted their usage and applicability. Given the limited storage available with mobile wireless devices or the limited bandwidth of the wireless channel, data compression techniques need to be applied on ...

Keywords: clustering, dictionary design, vector map compression

**9 Algorithms and programming models for efficient representation of XML for wireless devices**

Neel Sundaresan, Reshad Moussa

April 2001 Proceedings of the tenth international conference on World Wide Web

Full text available:  pdf(352.97 KB)

Additional Information: full citation, references, citations, index

Keywords: DOM, SAX, WBXML, XML, compression

## 10 Linguistic structure as composition and perturbation

Carl de Marcken

June 1996 Proceedings of the 34th conference on Association for Computation

Full text available: [pdf\(661.17 KB\)](#) [Publisher Site](#)

Additional Information: full citation, references, index terms

This paper discusses the problem of learning language from unprocessed text the problem of learning a lexicon. In particular, it argues for a representation parameters like words are built by perturbing a composition of existing param is demonstrated by several examples in text segmentation and compression, i and the acquisition of mappings between te ...

## 11 Voice response systems

D L. Lee, F H. Lochovsky

December 1983 ACM Computing Surveys (CSUR), Volume 15 Issue 4

Full text available: [pdf\(2.22 MB\)](#) Additional Information: full citation, references, index terms

## 12 Efficiency and scaling: Assigning identifiers to documents to enhance the c

Fabrizio Silvestri, Salvatore Orlando, Raffaele Perego

July 2004 Proceedings of the 27th annual international conference on Research ai

Full text available: [pdf\(201.50 KB\)](#)

Additional Information: full citation, abstract, references, index terms

Web Search Engines provide a large-scale text document retrieval service by | Inverted File indexes allow fast query resolution and good memory utilization effectively and efficiently compressed by using variable length encoding meth some algorithms aimed to find an assignment of the document identifiers whi d-gaps, thus enhanc ...

Keywords: clustering property, document identifier assignment, index compre

## 13 Engineering the compression of massive tables: an experimental approach

Adam L. Buchsbaum, Donald F. Caldwell, Kenneth W. Church, Glenn S. Fowler, I

February 2000 Proceedings of the eleventh annual ACM-SIAM symposium on Discr

Full text available: [pdf\(932.72 KB\)](#)

Additional Information: full citation, references, citations, index terms

<sup>14</sup> XML indexing and compression: XPRESS: a queriable compression for XML

Jun-Ki Min, Myung-Jae Park, Chin-Wan Chung

June 2003 Proceedings of the 2003 ACM SIGMOD international conference on M

Full text available:  pdf(277.17 KB)

Additional Information: full citation, abstract, references

Like HTML, many XML documents are resident on native file systems. Since XML uses disk space and the network bandwidth are wasted. To overcome the verbosity for XML data has been conducted. However, some XML compressors do not support other XML compressors which support querying compressed data blindly encoded using various encoding methods. Thus, the query performance on compressed XML documents is significantly improved.

<sup>15</sup> MPEG-4: an object-based multimedia coding standard supporting mobile a

Atul Puri, Alexandros Eleftheriadis

Mobile Networks and Applications, Volume 3 Issue 1

Full text available:  pdf(747.80 KB)

Additional Information: full citation, abstract, references, etc.

The ISO MPEG committee, after successful completion of the MPEG-1 and the on MPEG-4, the third MPEG standard. Originally, MPEG-4 was conceived to be complexity audio-visual scenes at very low bit-rates; however, in July 1994, i of scenes as a collection of individual audio-visual objects and enabling a rang supported by other standards. One of the ke ...

16 CDNs and caching: Value-based web caching

Sean C. Rhea, Kevin Liang, Eric Brewer

May 2003 Proceedings of the twelfth international conference on World Wide

Full text available:  pdf(168.62 KB)

Additional Information: full citation, abstract, references

Despite traditional web caching techniques, redundant data is often transferred. These transfers result from both resource modification and aliasing. Resource modification occurs when a single URI changes; often, in transferring the new data, some old data is retained. This happens when the same data is named by multiple URIs, often in the context of dynamic content delivery. Web caching techniques index data ...

**Keywords:** HTTP, WWW, aliasing, caching, duplicate suppression, dynamic cor  
privacy, proxy, redundant transfers, resource modification, scalability, world v

- **17 Versioning and fragmentation: Automatic detection of fragments in dynamic web pages**  
Lakshmis Ramaswamy, Arun Iyengar, Ling Liu, Fred Douglis  
May 2004      Proceedings of the 13th international conference on World Wide Web  
Full text available:  pdf(268.12 KB)      Additional Information: full citation, abstract, references, cite
- Dividing web pages into fragments has been shown to provide significant benefits for caching. In order for a web site to use fragment-based content generation, however, dividing web pages into fragments. Manual fragmentation of web pages is expensive. This paper proposes a novel scheme to automatically detect and flag fragments in web sites serving dynamic content. We consider ...
- Keywords: L-P fragments, dynamic content caching, fragment detection, fragr
- **18 JAZZ: an efficient compressed format for Java archive files**  
Quetzalcoatl Bradley, R. Nigel Horspool, Jan Vitek  
November 1998      Proceedings of the 1998 conference of the Centre for Advanced Studies in Software Engineering  
Full text available:  pdf(73.54 KB)      Additional Information: full citation, abstract, references, cite
- The Jazz file format is intended to be a replacement for the JAR file format without losing the features of Java programs. A Jazz file is compressed to a degree that far exceeds what is possible with the ZIP file format. The Jazz format permits faster transmission speeds over a network and has lower storage requirements. The compression is achieved as a combination of different data compression characteristics of collectio ...
- **19 Potential benefits of delta encoding and data compression for HTTP**  
Jeffrey C. Mogul, Fred Douglis, Anja Feldmann, Balachander Krishnamurthy  
October 1997      ACM SIGCOMM Computer Communication Review , Proceedings of the Conference on Applications, technologies, architectures, and protocols for computer communication  
Full text available:  pdf(2.00 MB)      Additional Information: full citation, abstract, references, cite
- Caching in the World Wide Web currently follows a naive model, which assumes that the time between changes is constant. The model also provides no way to update a cache entry without transferring the resource's entire new value. Several previous papers have proposed transferring only the differences, or "delta," between the cached entry and the current use of dynamic traces of the full contents of ...
- **20 Software III: Storing text using integer codes**  
Raja Noorainon  
August 1986      Proceedings of the 11th conference on Computational linguistics  
Full text available:  pdf(272.03 KB)      Additional Information: full citation, abstract, references, cite
- Traditionally, text is stored on computers as a stream of characters. The goal of this paper is to propose a scheme that facilitates word manipulation whilst reducing storage space. A word list where words in a text are given two-byte integer codes that point to their respective memory locations. The implementation of the encoding scheme is described and the performance statistics presented.

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Miklos Ajtai, Randal Burns, Ronald Fagin, Darrell D. E. Long, Larry Stockmeyer  
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Full text available: pdf(348.32 KB)

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Keywords: Delta compression, differencing, differential compression

## 2 An analysis of the longest match and the greedy heuristics in text encoding

Jyrki Katajainen, Timo Raita

April 1992 Journal of the ACM (JACM), Volume 39 Issue 2

Full text available: pdf(821.44 KB)

Additional Information: full citation, abstract, references, citations

Text compression is often done using a fixed, previously formed dictionary (codebook). In this paper, we analyze the performance of the longest match (LZ77) and the greedy heuristics for various types of dictionaries. We show that the problem of finding the best dictionary for LZ77 is NP-hard. Due to the long processing times of the various optimal algorithms, we also study the performance of heuristic algorithms. In this paper, the worst-case compression gains obtained by the greedy heuristics for various types of dictionaries is ...

Keywords: optimal and heuristic encoding, shortest paths, textual substitution

### 3 Tools for visualizing text compression algorithms

Sami Khuri, Hsiu-Chin Hsu

March 2000      Proceedings of the 2000 ACM symposium on Applied computing

Full text available:  pdf(561.39 KB)

Additional Information: full citation, references, index terms

Keywords: adaptive Huffman coding, algorithms, dictionary encoding, text compression

### 4 Software III: Storing text using integer codes

Raja Noor Ainan

August 1986      Proceedings of the 11th conference on Computational linguistics

Full text available:  pdf(272.03 KB)

Additional Information: full citation, abstract, references, cite

Traditionally, text is stored on computers as a stream of characters. The goal of this paper is to propose a method of storing text using integer codes that facilitates word manipulation whilst reducing storage space. A word list with words in a text are given two-byte integer codes that point to their respective locations. The implementation of the encoding scheme is described and the performance statistics are presented.

### 5 Compression, information theory, and grammars: a unified approach

Abraham Bookstein, Shmuel T. Klein

January 1990      ACM Transactions on Information Systems (TOIS), Volume 8 ]

Full text available:  pdf(1.80 MB)

Additional Information: full citation, abstract, references, cite

Text compression is of considerable theoretical and practical interest. It is, for example, important for satisfying the requirements of fitting a large database onto a small storage device. The techniques discussed in the literature are model based. We here propose the first model of text generation that encompasses most of the models offered before. This model makes it possible to compress text to a ...

### 6 Efficient recompression techniques for dynamic full-text retrieval systems

Shmuel T. Klein

July 1995      Proceedings of the 18th annual international ACM SIGIR conference on information retrieval

Full text available:  pdf(870.44 KB)

Additional Information: full citation, references, cite

**7 Dictionary-based order-preserving string compression**

Gennady Antoshenkov

February 1997 *The VLDB Journal — The International Journal on Very Large Databases*Full text available:  pdf(203.08 KB)

Additional Information: full citation, abstract, index

As no database exists without indexes, no index implementation exists without particular, without prefix and tail compression. However, despite the great potential for faster, application of general compression methods to ordered data sets has a demonstrated that the fast dictionary-based methods can be applied to order-same freedom as in the general case. The pro ...

Keywords: Indexing, Order-preserving key compression

**8 Algorithms and programming models for efficient representation of XML for wireless devices**

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April 2001 *Proceedings of the tenth international conference on World Wide Web*Full text available:  pdf(352.97 KB)

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Carl de Marcken

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June 1998 *Proceedings of the seventeenth annual ACM symposium on Principles of distributed systems*Full text available:  pdf(1.18 MB)

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Full text available:  pdf(277.17 KB)

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**13 Posting compression in dynamic retrieval environments**

IJsbrand Jan Aalbersberg

September 1991    Proceedings of the 14th annual international ACM SIGIR conference on information retrieval

Full text available:  pdf(1.16 MB)

Additional Information: full citation, references, citations, index terms

**14 Engineering the compression of massive tables: an experimental approach**

Adam L. Buchsbaum, Donald F. Caldwell, Kenneth W. Church, Glenn S. Fowler, and Michael Mitzenmacher

February 2000    Proceedings of the eleventh annual ACM-SIAM symposium on Discrete algorithms

Full text available:  pdf(932.72 KB)

Additional Information: full citation, references, citations, index terms

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James A. Storer, Thomas G. Szymanski

May 1978      Proceedings of the tenth annual ACM symposium on Theory of com

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**16 The FINITE STRING Newsletter: Abstracts of current literature**

Computational Linguistics Staff

January 1987    Computational Linguistics, Volume 13 Issue 1-2

Full text available: pdf(6.15 MB) Publisher Site

Additional Information: full citation

**17 Document processing and transaction modeling: A multi-group technique for**

K. A. Hazboun, M. A. Bassiouni

June 1982    Proceedings of the 1982 ACM SIGMOD international conference on M

Full text available: pdf(725.49 KB)

Additional Information: full citation, abstract, references

An efficient compression technique that is particularly attractive for the storage transfer of such files within a distributed communication network is outlined. A two-level hierarchy of Huffman-type binary trees, is a reversible semantic-independent encoding method that makes use of the group locality of character reference to occurrence of various characters within the ...

Keywords: binary trees, character distribution, coding techniques, compression, failure node, locality of character reference

**18 MPEG-4: an object-based multimedia coding standard supporting mobile applications**

Atul Puri, Alexandros Eleftheriadis

June 1998    Mobile Networks and Applications, Volume 3 Issue 1

Full text available: pdf(747.80 KB)

Additional Information: full citation, abstract, references, citations

The ISO MPEG committee, after successful completion of the MPEG-1 and the work on MPEG-2, started work on MPEG-4, the third MPEG standard. Originally, MPEG-4 was conceived to be a standard for compressing complex audio-visual scenes at very low bit-rates; however, in July 1994, it was decided to define the standard as a collection of individual audio-visual objects and enabling a range of applications supported by other standards. One of the key features of the standard is its support for mobile applications.

**19 Computing curricula 2001**

September 2001      Journal on Educational Resources in Computing (JERIC)

Full text available: pdf(613.63 KB) html(2.78 KB) Additional Information: full citation, references, citations, inc

**20 Optimizing document format: Compression of scan-digitized Indian language technique**

U. Garain, S. Debnath, A. Mandal, B. B. Chaudhuri

November 2003      Proceedings of the 2003 ACM symposium on Document eng

Full text available: pdf(272.00 KB)

Additional Information: full citation, abstract, references, citations, inc

In this paper, a new compression scheme is presented for Indian Language (IL). Technology for IL scripts is not matured enough, transcription of these documents requires special techniques that achieve high degree of compression as well as suitable methods for document indexing, retrieval, etc. The proposed method is essentially based on segmenting the document which has been realized with an efficient segmentation ...

Keywords: data compression, indian language, pattern matching, textual image processing, document compression

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